REMARKS

Claims 9 and 17 are amended.

Claim 9 is rejected under 35 U.S.C. 112 for lack of antecedent basis and is amended to delete the phrase objected to by the Examiner. Applicants respectfully submit that all claims meet the requirements of 35 U.S.C. 112.

Claims 9, 11, 13, 15-17, 25, 27, 29, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Schetzina, U.S. Patent 5,670,798. Applicants respectfully traverse the rejection.

Claim 9 recites "forming an active region over the first semiconductor layer, the active region including a second semiconductor layer, the second semiconductor layer one of a quantum well layer and a barrier layer, the second semiconductor layer formed from a III-Nitride semiconductor alloy having a composition graded in a direction substantially perpendicular to the first surface of the first semiconductor layer."

In contrast to claim 9, Schetzina's graded regions are not part of the active region. Specifically, the Examiner cites Fig. 9C as teaching "a second semiconductor layer formed from a III-nitride alloy having an indium mole fraction or composition graded." See office action, page 4. Fig. 9C illustrates an energy band diagram in which "pseudograded Group III-V nitride multi-quantum well structures are used to eliminate band offsets between other nitrides." See column 8, lines 49-51. The "pseudograding" illustrated in Fig. 9C takes place in multiple quantum well structure 222b, which is part of ohmic contact layer 220b, as illustrated in Fig. 5, not part of the active region. Multiple quantum well structure 222b is not an active region that emits light, rather it improves the flow of carriers into the active region. The purpose of the multiple quantum well structure is described at column 12, lines 22-27:

> As illustrated in FIG. 5, by increasing the thickness of GaN layers in the 220a, 220b MQW, along with appropriate doping, the band offsets between the Al1-xGaxN cladding layers 114a, 114b and the GaN layers 124a and 124 b which may otherwise impede the flow of carriers into the active region 112 of the device can be eliminated.

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Accordingly, Schetzina does not teach a composition graded semiconductor layer included in the active region, as recited in claim 9. Claim 9 is patentable over Schetzina. Claims 11, 13, and 15-17 depend from claim 9 and are therefore also patentable over Schetzina.

Claim 25 recites an "active region including . . . at least one barrier layer, the barrier layer . . . having an indium mole fraction graded in a direction substantially perpendicular to the first surface of the first semiconductor layer." In contrast, as described above, Schetzina's graded and pseudograded layers are not part of the active region. Accordingly, claim 25 is patentable over Schetzina. Claims 27, 29, and 31 depend from claim 25 and are therefore also patentable over Schetzina.

Claims 10 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schetzina in view of Yano et al., U.S. Patent 6,045,626. Claim 10 depends from claim 9 and claim 26 depends from claim 25. Yano et al. add nothing to the deficiencies of Schetzina with respect to claims 9 and 25, described above. Accordingly, claims 10 and 26 are patentable over Schetzina and Yano et al.

Claims 12, 14, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schetzina. Claims 12 and 14 depend from claim 9 and claims 28 and 30 depend from claim 25. As described above, claims 9 and 25 are patentable over Schetzina. Accordingly, claims 12, 14, 28, and 30 are also patentable over Schetzina.

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In view of the above arguments, Applicants respectfully request allowance of claims 9-17 and 25-31. Should the Examiner have any questions, the Examiner is invited to call the undersigned at (408) 382-0480.

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ATTACHMENT A

IN THE CLAIMS

Claims are amended as follows:

9. (Amended) A method of forming a light emitting device, the method comprising:

forming a first semiconductor layer of a first conductivity type and having a first surface;

forming an active region over the first semiconductor layer, the active region including a second semiconductor layer, the second semiconductor layer one of a quantum well layer and a barrier layer, the second semiconductor layer formed from a III-Nitride semiconductor alloy having a composition graded in a direction substantially perpendicular to the first surface of the [substrate] first semiconductor layer; and

forming a third semiconductor layer of a second conductivity type over the active region.

17. (Amended) The method of Claim [1] 9, wherein the active region is formed directly on the first semiconductor layer.

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